

## **Choice Based Credit System Syllabus (2019 Pattern)**

### **S.Y.B.A., Syllabus for Project at Semester IV**

**Class : S.Y.B.A.**

**Course : Project**

**Course Code : PR-1**

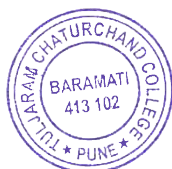
**No. of Credits : 2**

### **Course Objectives**

1. To enable students to formulate, design, and conduct a research project focused on regional issues, thereby enhancing their research and analytical skills.
2. To instruct students in the creation of a comprehensive and well-structured Project Work Report, including all necessary components such as introduction, methodology, results, and conclusions.
3. To cultivate students' abilities to analyze data, interpret results, and present their findings in a clear and concise manner.
4. To prepare students for a professional presentation of their project work through viva-voce, demonstrating their understanding and ability to communicate their research findings.
5. To provide students with the opportunity to work either independently or in small groups, fostering both individual responsibility and teamwork skills.

### **Course Outcomes**

- CO1. Students will be able to identify and define a research problem related to regional issues, develop appropriate research aims and objectives, and apply suitable methodologies to address the problem.
- CO2. Students will produce a detailed Project Work Report that includes an introduction, aims and objectives, methodology, analysis, results, conclusions, references, and bibliography, adhering to academic standards.
- CO3. Students will demonstrate the ability to analyze data effectively.
- CO4. Students will demonstrate the ability to interpret findings accurately, and provide well-supported conclusions based on their research.
- CO5. Students will be able to present their research findings clearly and effectively during the viva-voce session, utilizing available equipment and responding to questions with confidence and clarity.



- CO6. Students will be proficient in documenting their research work, including proper citation and referencing of sources, ensuring completeness and accuracy in their Project Work Report.
- CO7. Students will follow the prescribed guidelines for project work, including formatting requirements, length, and the inclusion of necessary components such as tables, figures, and photographs.

**Content:**

**Project Work Guidelines: -**

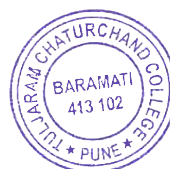
1. The students shall declare the option of project work at the beginning of the 3<sup>rd</sup> semester.
2. A teacher in a department is eligible to guide the students.
3. Project Work Report should be done by each student separately or in group of not more than 6, under the guidance of the teacher.
4. Topics might be in the view of regional issues.

**Write up: General Guide Lines: -**

1. The Project Work Report should cover the following aspects.
  - a. Introduction to the problem.
  - b. Aims and objectives of the study.
  - c. Methodology
  - d. Analysis, description and interpretation.
  - e. Results
  - f. Conclusions
  - g. References
2. Every table, figure, photograph should have a caption and with references.
3. The list of references should be given at the end and all the references should be complete in all respects (author(s)) name, year, title of the article or book, name of the journal, name of the publisher of the book and place of publication, volume of journal and page numbers).
4. The total number of pages should be minimum 25, including text, figures, tables, photographs, references and appendices.
5. At the time of viva-voce presentation may be given with the help of equipment which are available in the respective department.

Project work will be assessed at department level for 50 marks.

Project work will be assessed by internal and external examiners.



## Choice Based Credit System Syllabus (2019 Pattern)

### S.Y.B.A., Syllabus for Project at Semester IV

Class	: S.Y.B.A.	Course	: Project
Course Code	: PR-1	No. of Credits	: 2

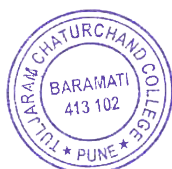
#### Mapping of Program Outcomes (POs) with Course Outcomes (COs)

Weightage: 1= Weak or low relation, 2= Moderate or partial relation, 3= Strong or direct relation

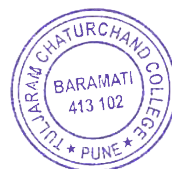
Programme outcomes								
Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	3	2	2	1	3
CO2	3	1	2	3	2	1	1	2
CO3	2	1	1	2	2	1	1	3
CO4	2	1	1	2	2	1	1	3
CO5	2	1	3	2	3	1	1	2
CO6	3	2	2	3	2	1	1	2
CO7	3	1	1	3	2	1	1	1

#### Justifications

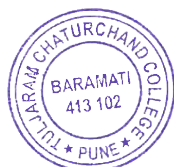
- CO1: Students will be able to identify and define a research problem related to regional issues, develop appropriate research aims and objectives, and apply suitable methodologies to address the problem.**
  - PO1 (Research-Related Skills): 3** - Strong relation. Identifying and defining a research problem and applying methodologies are central to research skills.
  - PO2 (Effective Citizenship and Ethics): 2** - Moderate relation. Addressing regional issues may involve ethical considerations and social concern.
  - PO3 (Social Competence): 2** - Moderate relation. Formulating research problems and objectives requires clear communication and understanding.
  - PO4 (Disciplinary Knowledge): 3** - Strong relation. Requires a deep understanding of the discipline to develop and address research problems.
  - PO5 (Personal and Professional Competence): 2** - Moderate relation. Involves working independently and collaboratively to develop research aims and apply methodologies.
  - PO6 (Self-Directed and Life-Long Learning): 2** - Moderate relation. Engaging in research promotes ongoing learning.



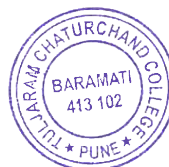
- **PO7 (Environment and Sustainability): 1** - Weak relation unless the research problem specifically involves environmental issues.
  - **PO8 (Critical Thinking and Problem Solving): 3** - Strong relation. Identifying research problems and developing methodologies involve critical thinking and problem-solving skills.
- 2. CO2: Students will produce a detailed Project Work Report that includes an introduction, aims and objectives, methodology, analysis, results, conclusions, references, and bibliography, adhering to academic standards.**
- **PO1 (Research-Related Skills): 3** - Strong relation. Creating a detailed report is a fundamental aspect of research and reporting.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. The focus is on technical aspects rather than ethical issues.
  - **PO3 (Social Competence): 2** - Moderate relation. Clear and precise documentation reflects communication skills.
  - **PO4 (Disciplinary Knowledge): 3** - Strong relation. Adhering to academic standards in the report demonstrates thorough understanding of the discipline.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Producing a detailed report demonstrates professionalism and competence.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to the project rather than general learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the report addresses sustainability.
  - **PO8 (Critical Thinking and Problem Solving): 2** - Moderate relation. Involves analysis and presentation of findings, which require problem-solving skills.
- 3. CO3: Students will demonstrate the ability to analyze data effectively.**
- **PO1 (Research-Related Skills): 2** - Moderate relation. Data analysis is a key component of research skills.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Data analysis does not directly relate to ethical concerns.
  - **PO3 (Social Competence): 1** - Weak relation. Data analysis is technical and less related to social competence.
  - **PO4 (Disciplinary Knowledge): 2** - Moderate relation. Effective data analysis demonstrates knowledge in the discipline.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Analyzing data effectively is an important professional skill.



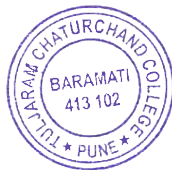
- **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to research rather than broader learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the data pertains to environmental issues.
  - **PO8 (Critical Thinking and Problem Solving): 3** - Strong relation. Effective data analysis requires critical thinking and problem-solving.
4. **CO4: Students will demonstrate the ability to interpret findings accurately and provide well-supported conclusions based on their research.**
- **PO1 (Research-Related Skills): 2** - Moderate relation. Interpreting findings and drawing conclusions are key aspects of research.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Focuses more on research output rather than ethical issues.
  - **PO3 (Social Competence): 1** - Weak relation. Interpretation and conclusions are more technical and less related to social skills.
  - **PO4 (Disciplinary Knowledge): 2** - Moderate relation. Accurate interpretation and conclusions reflect strong understanding of the discipline.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Providing well-supported conclusions demonstrates professional competency.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to research rather than general learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the conclusions involve sustainability.
  - **PO8 (Critical Thinking and Problem Solving): 3** - Strong relation. Accurate interpretation and conclusion drawing involve critical thinking and problem-solving skills.
5. **CO5: Students will be able to present their research findings clearly and effectively during the viva-voce session, utilizing available equipment and responding to questions with confidence and clarity.**
- **PO1 (Research-Related Skills): 2** - Moderate relation. Presentation is part of the research process but focuses on communication.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Presentation skills are less about ethics and more about clear communication.
  - **PO3 (Social Competence): 3** - Strong relation. Effective presentation involves strong communication and interpersonal skills.
  - **PO4 (Disciplinary Knowledge): 2** - Moderate relation. Demonstrating findings effectively reflects understanding of the discipline.



- **PO5 (Personal and Professional Competence): 3** - Strong relation. Presentation skills are crucial for demonstrating professional competence.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to presentation rather than broader learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the presentation includes sustainability aspects.
  - **PO8 (Critical Thinking and Problem Solving): 2** - Moderate relation. Responding to questions during a presentation requires critical thinking.
- 6. CO6: Students will be proficient in documenting their research work, including proper citation and referencing of sources, ensuring completeness and accuracy in their Project Work Report.**
- **PO1 (Research-Related Skills): 3** - Strong relation. Proper documentation and citation are integral to research integrity and reporting.
  - **PO2 (Effective Citizenship and Ethics): 2** - Moderate relation. Accurate citation relates to ethical research practices and intellectual property rights.
  - **PO3 (Social Competence): 2** - Moderate relation. Clear documentation reflects communication competence.
  - **PO4 (Disciplinary Knowledge): 3** - Strong relation. Adherence to documentation standards demonstrates strong disciplinary knowledge.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Proficiency in documentation is a key aspect of professional competence.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to project work rather than general learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the documentation involves environmental aspects.
  - **PO8 (Critical Thinking and Problem Solving): 2** - Moderate relation. Involves organizing and presenting information accurately, which requires problem-solving skills.
- 7. CO7: Students will follow the prescribed guidelines for project work, including formatting requirements, length, and the inclusion of necessary components such as tables, figures, and photographs.**
- **PO1 (Research-Related Skills): 3** - Strong relation. Following guidelines is crucial for accurate research reporting and adherence to academic standards.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Focuses on technical aspects of project work rather than ethical concerns.
  - **PO3 (Social Competence): 1** - Weak relation. Less related to social competence and more to technical skills.



- **PO4 (Disciplinary Knowledge): 3** - Strong relation. Adherence to guidelines reflects strong knowledge of the discipline.
- **PO5 (Personal and Professional Competence): 2** - Moderate relation. Following guidelines is an important part of professional competency.
- **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to the project rather than broader learning.
- **PO7 (Environment and Sustainability): 1** - Weak relation unless the guidelines address environmental aspects.
- **PO8 (Critical Thinking and Problem Solving): 1** - Weak relation. Following guidelines is more about adherence than problem-solving.



## **Choice Based Credit System Syllabus (2019 Pattern)**

### **T.Y.B.A., Syllabus for Project at Semester VI**

**Class : T.Y.B.A.**

**Course : Project**

**Course Code : PR-2**

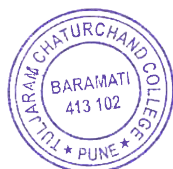
**No. of Credits : 2**

### **Course Objectives**

1. To enable students to formulate, design, and conduct a research project focused on regional issues, thereby enhancing their research and analytical skills.
2. To instruct students in the creation of a comprehensive and well-structured Project Work Report, including all necessary components such as introduction, methodology, results, and conclusions.
3. To cultivate students' abilities to analyze data, interpret results, and present their findings in a clear and concise manner.
4. To prepare students for a professional presentation of their project work through viva-voce, demonstrating their understanding and ability to communicate their research findings.
5. To provide students with the opportunity to work either independently or in small groups, fostering both individual responsibility and teamwork skills.

### **Course Outcomes**

- CO1. Students will be able to identify and define a research problem related to regional issues, develop appropriate research aims and objectives, and apply suitable methodologies to address the problem.
- CO2. Students will produce a detailed Project Work Report that includes an introduction, aims and objectives, methodology, analysis, results, conclusions, references, and bibliography, adhering to academic standards.
- CO3. Students will demonstrate the ability to analyze data effectively.
- CO4. Students will demonstrate the ability to interpret findings accurately, and provide well-supported conclusions based on their research.
- CO5. Students will be able to present their research findings clearly and effectively during the viva-voce session, utilizing available equipment and responding to questions with confidence and clarity.





- CO6. Students will be proficient in documenting their research work, including proper citation and referencing of sources, ensuring completeness and accuracy in their Project Work Report.
- CO7. Students will follow the prescribed guidelines for project work, including formatting requirements, length, and the inclusion of necessary components such as tables, figures, and photographs.

**Content:**

**Project Work Guidelines: -**

1. The students shall declare the option of project work at the beginning of the 5<sup>th</sup> semester.
2. A teacher in a department is eligible to guide the students.
3. Project Work Report should be done by each student separately or in group of not more than 3, under the guidance of the teacher.
4. Topics might be in the view of regional issues.

**Write up: General Guide Lines: -**

1. The Project Work Report should cover the following aspects.
  - a. Introduction to the problem.
  - b. Aims and objectives of the study.
  - c. Methodology
  - d. Analysis, description and interpretation.
  - e. Results
  - f. Conclusions
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2. Every table, figure, photograph should have a caption and with references.
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4. The total number of pages should be minimum 25, including text, figures, tables, photographs, references and appendices.
5. At the time of viva-voce presentation may be given with the help of equipment which are available in the respective department.

Project work will be assessed at department level for 50 marks.

Project work will be assessed by internal and external examiners.



## Choice Based Credit System Syllabus (2019 Pattern)

### T.Y.B.A., Syllabus for Project at Semester VI

Class	: T.Y.B.A.	Course	: Project
Course Code	: PR-2	No. of Credits	: 2

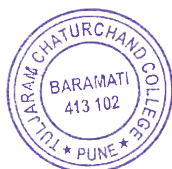
#### Mapping of Program Outcomes (POs) with Course Outcomes (COs)

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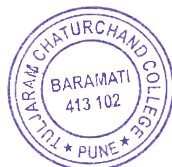
Programme outcomes								
Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
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CO2	3	1	2	3	2	1	1	2
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CO5	2	1	3	2	3	1	1	2
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CO7	3	1	1	3	2	1	1	1

#### Justifications

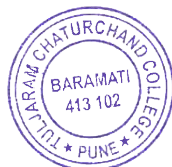
- CO1: Students will be able to identify and define a research problem related to regional issues, develop appropriate research aims and objectives, and apply suitable methodologies to address the problem.**
  - PO1 (Research-Related Skills): 3** - Strong relation. Identifying and defining a research problem and applying methodologies are central to research skills.
  - PO2 (Effective Citizenship and Ethics): 2** - Moderate relation. Addressing regional issues may involve ethical considerations and social concern.
  - PO3 (Social Competence): 2** - Moderate relation. Formulating research problems and objectives requires clear communication and understanding.
  - PO4 (Disciplinary Knowledge): 3** - Strong relation. Requires a deep understanding of the discipline to develop and address research problems.
  - PO5 (Personal and Professional Competence): 2** - Moderate relation. Involves working independently and collaboratively to develop research aims and apply methodologies.
  - PO6 (Self-Directed and Life-Long Learning): 2** - Moderate relation. Engaging in research promotes ongoing learning.



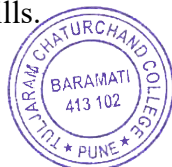
- **PO7 (Environment and Sustainability): 1** - Weak relation unless the research problem specifically involves environmental issues.
  - **PO8 (Critical Thinking and Problem Solving): 3** - Strong relation. Identifying research problems and developing methodologies involve critical thinking and problem-solving skills.
- 2. CO2: Students will produce a detailed Project Work Report that includes an introduction, aims and objectives, methodology, analysis, results, conclusions, references, and bibliography, adhering to academic standards.**
- **PO1 (Research-Related Skills): 3** - Strong relation. Creating a detailed report is a fundamental aspect of research and reporting.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. The focus is on technical aspects rather than ethical issues.
  - **PO3 (Social Competence): 2** - Moderate relation. Clear and precise documentation reflects communication skills.
  - **PO4 (Disciplinary Knowledge): 3** - Strong relation. Adhering to academic standards in the report demonstrates thorough understanding of the discipline.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Producing a detailed report demonstrates professionalism and competence.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to the project rather than general learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the report addresses sustainability.
  - **PO8 (Critical Thinking and Problem Solving): 2** - Moderate relation. Involves analysis and presentation of findings, which require problem-solving skills.
- 3. CO3: Students will demonstrate the ability to analyze data effectively.**
- **PO1 (Research-Related Skills): 2** - Moderate relation. Data analysis is a key component of research skills.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Data analysis does not directly relate to ethical concerns.
  - **PO3 (Social Competence): 1** - Weak relation. Data analysis is technical and less related to social competence.
  - **PO4 (Disciplinary Knowledge): 2** - Moderate relation. Effective data analysis demonstrates knowledge in the discipline.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Analyzing data effectively is an important professional skill.



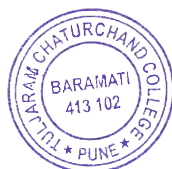
- **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to research rather than broader learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the data pertains to environmental issues.
  - **PO8 (Critical Thinking and Problem Solving): 3** - Strong relation. Effective data analysis requires critical thinking and problem-solving.
4. **CO4: Students will demonstrate the ability to interpret findings accurately and provide well-supported conclusions based on their research.**
- **PO1 (Research-Related Skills): 2** - Moderate relation. Interpreting findings and drawing conclusions are key aspects of research.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Focuses more on research output rather than ethical issues.
  - **PO3 (Social Competence): 1** - Weak relation. Interpretation and conclusions are more technical and less related to social skills.
  - **PO4 (Disciplinary Knowledge): 2** - Moderate relation. Accurate interpretation and conclusions reflect strong understanding of the discipline.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Providing well-supported conclusions demonstrates professional competency.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to research rather than general learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the conclusions involve sustainability.
  - **PO8 (Critical Thinking and Problem Solving): 3** - Strong relation. Accurate interpretation and conclusion drawing involve critical thinking and problem-solving skills.
5. **CO5: Students will be able to present their research findings clearly and effectively during the viva-voce session, utilizing available equipment and responding to questions with confidence and clarity.**
- **PO1 (Research-Related Skills): 2** - Moderate relation. Presentation is part of the research process but focuses on communication.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Presentation skills are less about ethics and more about clear communication.
  - **PO3 (Social Competence): 3** - Strong relation. Effective presentation involves strong communication and interpersonal skills.
  - **PO4 (Disciplinary Knowledge): 2** - Moderate relation. Demonstrating findings effectively reflects understanding of the discipline.



- **PO5 (Personal and Professional Competence): 3** - Strong relation. Presentation skills are crucial for demonstrating professional competence.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to presentation rather than broader learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the presentation includes sustainability aspects.
  - **PO8 (Critical Thinking and Problem Solving): 2** - Moderate relation. Responding to questions during a presentation requires critical thinking.
- 6. CO6: Students will be proficient in documenting their research work, including proper citation and referencing of sources, ensuring completeness and accuracy in their Project Work Report.**
- **PO1 (Research-Related Skills): 3** - Strong relation. Proper documentation and citation are integral to research integrity and reporting.
  - **PO2 (Effective Citizenship and Ethics): 2** - Moderate relation. Accurate citation relates to ethical research practices and intellectual property rights.
  - **PO3 (Social Competence): 2** - Moderate relation. Clear documentation reflects communication competence.
  - **PO4 (Disciplinary Knowledge): 3** - Strong relation. Adherence to documentation standards demonstrates strong disciplinary knowledge.
  - **PO5 (Personal and Professional Competence): 2** - Moderate relation. Proficiency in documentation is a key aspect of professional competence.
  - **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to project work rather than general learning.
  - **PO7 (Environment and Sustainability): 1** - Weak relation unless the documentation involves environmental aspects.
  - **PO8 (Critical Thinking and Problem Solving): 2** - Moderate relation. Involves organizing and presenting information accurately, which requires problem-solving skills.
- 7. CO7: Students will follow the prescribed guidelines for project work, including formatting requirements, length, and the inclusion of necessary components such as tables, figures, and photographs.**
- **PO1 (Research-Related Skills): 3** - Strong relation. Following guidelines is crucial for accurate research reporting and adherence to academic standards.
  - **PO2 (Effective Citizenship and Ethics): 1** - Weak relation. Focuses on technical aspects of project work rather than ethical concerns.
  - **PO3 (Social Competence): 1** - Weak relation. Less related to social competence and more to technical skills.



- **PO4 (Disciplinary Knowledge): 3** - Strong relation. Adherence to guidelines reflects strong knowledge of the discipline.
- **PO5 (Personal and Professional Competence): 2** - Moderate relation. Following guidelines is an important part of professional competency.
- **PO6 (Self-Directed and Life-Long Learning): 1** - Weak relation. Specific to the project rather than broader learning.
- **PO7 (Environment and Sustainability): 1** - Weak relation unless the guidelines address environmental aspects.
- **PO8 (Critical Thinking and Problem Solving): 1** - Weak relation. Following guidelines is more about adherence than problem-solving.



**SYLLABUS (CBCS) FOR M.Sc. I. Microbiology**  
**(w. e. from June, 2022)**  
**Academic Year 2022-2023**

Class: M. Sc. I (Semester- II)

Paper Code:

Paper:

Title of Paper: **Certificate Course in Research Methodology**

Credit: 2

No. of lectures: 30

**Learning Objectives:**

- To introduce the concepts of application and research in Microbiology
- To inculcate sense of scientific responsibilities

**Learning Outcome:**

- Students will able to Understand philosophy and ethics of research
- Students should be able to write research proposal.

**Theory: Introduction to Research (12L)**

- Philosophical foundation of research
- Understanding research publications
- Online Referencing Tools
- Plagiarism

**Practical: Scientific writing (18L)**

- Construction of title and Preparation of abstract for a research paper/ proposed project
- Writing materials and methods for a research paper/ proposed project
- Writing results, discussion, conclusion for a research paper/ project report
- Writing of research proposals
- Writing a project report
- Use of Statistical Software in data analysis (R software)

